UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

August 24, 2006

MEMORANDUM

Subject: Efficacy Review for Tackle;
EPA Reg. No. 5813-21; DP Barcode: D329354

From: Marcie Tidd, Microbiologist Marcie Tidd 8/24/06
Product Science Branch
Antimicrobials Division (7510C)

Thru: Michele E. Wingfield, Chief
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Applicant: The Clorox Company
c/o PS&RC; P.O. Box 493
Pleasanton, CA 94566

Formulation from the Label:

Active Ingredient(s)	% by wt.
Sodium Hypochlorite	1.84%
Other Ingredients	98.16%
Total	100.00%

I. BACKGROUND

The product, Tackle (EPA Reg. No. 5813-21), is an Agency-approved disinfectant (bactericide, fungicide, virucide), sanitizer, mildewcide, and deodorizer for use on hard, non-porous surfaces in household, commercial, industrial, institutional, food processing, animal care, and hospital or medical environments. The label claims that the product is effective in the

presence of a 5% organic soil load. The applicant requested to amend the registration of this product to add claims for effectiveness against Avian influenza virus, type A. Studies were conducted at ATS Labs, located at 1285 Corporate Center Drive, Suite 110, in Eagan, MN 55121; and MicroBioTest, Inc., located at 105 Carpenter Drive in Sterling, VA 20164.

This data package contained a letter from the applicant to The Agency (dated April 26, 2006), EPA Form 8570-1 (Application for Pesticide), two studies (MRID Nos. 468299-01 and 468299-02), Statements of No Data Confidentiality Claims for both studies, and the proposed label.

Note: The laboratory reports describe studies conducted for the product, F2005.0025. Both the applicant's letter to EPA (dated April 26, 2006) and the Application for Pesticide indicate that F2005.0025 is the same as CSF A06.

II. USE DIRECTIONS

The product is designed for use in disinfecting hard, non-porous surfaces such as appliances, bed frames, bidets, blinds, cabinets, changing tables, counter tops, cutting boards, diaper pails, dish pails and racks, door knobs, drinking fountains, floors, furniture, lamps, light switches, mattress covers, outdoor furniture, pet dishes, picnic tables, shower stalls, sinks, telephones, toilets, toys, tubs, urinals, walls, and wheelchairs. The label indicates that the product may be used on hard, non-porous surfaces including: Corian, enamel, fiberglass, Formica, glazed ceramic, glazed porcelain, glazed tiles, sealed granite, laminate, linoleum, Marlite, metal (e.g., chrome, stainless steel), plastic, synthetic or cultured marble, and vinyl. Directions on the proposed label provided the following information regarding preparation and use of the product as a disinfectant: Pre-clean heavily soiled areas. Apply product using a cloth, sponge, mop, rag, or sprayer until surfaces are thoroughly wet. Treated surfaces must remain wet for 30 seconds if sprayed, or 5 minutes if applied directly. Allow to air dry or rinse. The product may also be diluted before applying directly to surfaces, by mixing ½ cup of the product per 1 gallon of water (a 1:32 dilution). A contact time of 5 minutes is specified for the diluted product.

III. AGENCY STANDARDS FOR PROPOSED CLAIMS

Virucides

The effectiveness of virucides against specific viruses must be supported by efficacy data that simulates, to the extent possible in the laboratory, the conditions under which the product is intended to be used. Carrier methods that are modifications of either the AOAC Use-Dilution Method (for liquid disinfectants) or the AOAC Germicidal Spray Products as Disinfectants Method (for spray disinfectants) must be used. To simulate in-use conditions, the specific virus to be treated must be inoculated onto hard surfaces, allowed to dry, and then treated with the product according to the directions for use on the product label. One surface for each of 2 different product lots of disinfectant must be tested against a recoverable virus titer of at least 10^4 from the test surface for a specified

exposure period at room temperature. Then, the virus must be assayed by an appropriate virological technique, using a minimum of four determinations per each dilution assayed. Separate studies are required for each virus. The calculated viral titers must be reported with the test results. For the data to be considered acceptable, results must demonstrate complete inactivation of the virus at all dilutions. When cytotoxicity is evident, at least a 3-log reduction in titer must be demonstrated beyond the cytotoxic level. These Agency standards are presented in DIS/TSS-7.

Supplemental Recommendations

Antimicrobial agents which claim to be "one-step" cleaner-disinfectants, or cleaner-sanitizers, or agents to be used in the presence of organic soil, must undergo appropriate efficacy testing modified to include a representative organic soil of 5% blood serum. A suggested method to simulate antimicrobial treatment of dry inanimate surfaces is to add the blood serum 5% v/v (19mL bacterial inoculum with 1mL blood serum) to bacterial inoculum prior to carrier contamination and drying. Control data should be produced as described in Supplemental Recommendation 6 of DIS/TSS-2 to confirm the validity of this test with this modification. The suggested organic soil level is appropriate for simulation of lightly to moderately soiled surfaces. For highly soiled surfaces, a prior cleaning step should be recommended on the product label. A suggested procedure for incorporating organic soil load where the antimicrobial agent is not tested against a dry inanimate surface, such as the AOAC Fungicidal Test involves adding 5% v/v blood serum directly to the test solution (e.g., 4.75 ml test solution + 0.25 ml blood serum) before adding 0.5 ml of the required level (5 X 10^6 /ml) of conidia. These agency standards can be found in DIS/TSS-2.

IV. SUMMARY OF SUBMITTED STUDIES

1. MRID 468299-01 "Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces, Virus: Avian Influenza A (H3N2) virus (Avian Reassortant)" for F2005.0025, by Kelleen Gutzmann. Study conducted at ATS Labs. Study completion date – April 3, 2006. Project Number A03641.

This study was conducted against Avian influenza (H3N2) virus, type A (Avian Reassortant) (Strain A/Washington/897/80 X A/Mallard/New York/6750/78; ATCC VR-2072), using Rhesus monkey kidney cells (RMK cells; originally obtained from ViroMed Laboratories, Inc.) as the host system. Two lots (Lot Nos. CCUB1 and CCUB2) of the product, F2005.0025, were tested according to ATS Labs Protocol No. CX14011106.AFLU (copy not provided). The product was received ready-to-use. The stock virus culture was adjusted to contain 5% fetal bovine serum as the organic soil load. Films of virus were prepared by spreading 0.2 mL of virus inoculum uniformly over the bottoms of separate sterile glass Petri dishes. The virus films were air-dried at 20.0°C in a relative humidity of 47% for 20 minutes. For each lot of product, separate dried virus films were sprayed (3 sprays) at a distance of 4-6 inches from the carrier surface. The carriers remained exposed to the product for 30 seconds at 20.0°C. After

exposure, the plates were scraped with a cell scraper to re-suspend the contents. The virus-disinfectant mixtures were passed through Sephadex columns, and diluted serially in Minimum Essential Medium supplemented with 1% (v/v) heat-inactivated fetal bovine serum, 10 µg/mL gentamicin, 100 units/mL penicillin, and 2.5 µg/mL amphotericin B. RMK cells in multi-well culture dishes were inoculated in quadruplicate with 0.1 mL of the dilutions. The cultures were incubated at 36-38°C in a humidified atmosphere of 5-7% CO_2 and scored periodically for 7 days for the presence or absence of unspecified cytopathic effects, cytotoxicity, and viability. Controls included those for dried virus counts, cytotoxicity, and neutralization. Viral and cytotoxicity titers were calculated by the method of Spearman Karber.

2. MRID 468299-02 "Virucidal Efficacy Test, Virus: Avian Influenza Virus, Type A" for F2005.0025, by Lisa M. Lundberg. Study conducted at MicroBioTest, Inc. Study completion date – February 20, 2006. Laboratory Project Identification Number 320-372.

This study was conducted against Avian influenza virus, type A (Strain Turkey/Wis/66 (H9N2); obtained from SPAFAS), using embryonated chicken eggs (obtained from BE Eggs) as the host system. Two lots (Lot Nos. CCUB159 and CCUB257) of the product, F2005.0025, were tested according to MicroBioTest Protocol "Virucidal Efficacy Test, Avian Influenza Virus, Type A," dated November 2, 2005 (copy provided). A use solution was prepared by adding ½ cup of the product to 1 gallon of 100 ± 2.9% ppm AOAC synthetic hard water (titration results not provided; a 1:32 dilution). The stock virus culture contained at least a 5% organic soil load. Films of virus were prepared by spreading 0.2 mL of virus inoculum uniformly over the bottoms of separate sterile glass Petri dishes. The virus films were dried at ambient conditions. For each lot of product, separate dried virus films were treated with 2.0 mL of the use solution for 5 minutes at 21°C. After exposure, 2.0 mL of newborn calf serum supplemented with 0.1% sodium thiosulfate was added to neutralize. The plates were scraped with a cell scraper to re-suspend the contents. The virus-disinfectant mixtures were diluted serially in Earle's Balanced Salt Solution. Embryonated chicken eggs were inoculated in quadruplicate via the allantoic route with 0.2 mL of the dilutions. The eggs were incubated at 36±2°C for 2-4 days. Following incubation, the eggs were candled and then stored at 2±2°C overnight. Afterwards, the allantoic fluid was harvested from each egg and kept at 2±2°C until assay. The presence of replicating virus was examined using a hemagglutination assay. Controls included those for host viability, plate recovery, toxicity, toxicity-related viral interference, and neutralizer effectiveness. The 50% embryo lethal dose/embryo infectious dose per mL (ELD/EID50/mL) was calculated by the method of Reed and Muench.

Note: The laboratory report includes a "Confidentiality" clause on page 24, which restricts the reporting of data to the public.

V. RESULTS

MRID Number	Organism	Results			Dried Virus Control ($TCID_{50}$/0.1 mL)
			Lot No. CCUB1	**Lot No. CCUB2**	
468299-01	Avian Influenza A (H3N2) virus	10^{-1} dilution	Cytotoxicity	Cytotoxicity	$10^{5.25}$
		10^{-2} to 10^{-7} dilutions	Complete inactivation	Complete inactivation	
		$TCID_{50}$/0.1 mL	$\leq 10^{1.5}$	$\leq 10^{1.5}$	
		Log reduction	>3.75 $\log_{10}$	>3.75 $\log_{10}$	
			Lot No. CCUB159	**Lot No. CCUB257**	**Plate Recovery Control (ELD/EID_{50}/mL)**
468299-02	Avian influenza A (H9N2) virus	10^{-2} to 10^{-7} dilutions	Complete inactivation	Complete inactivation	$10^{5.33}$
		ELD/EID_{50}/mL	$\leq 10^{1.67}$	$\leq 10^{1.50}$	
		Log reduction	>3.66 $\log_{10}$	>3.83 $\log_{10}$	

VI. CONCLUSIONS

1. The submitted efficacy data (MRID No. 468299-01) support* the effectiveness of the product, Tackle, as a disinfectant with virucidal activity against Avian Influenza A (H3N2) virus on hard, non-porous surfaces in the presence of a 5% organic soil load for a contact time of 30 seconds, when delivered as a spray. A recoverable virus titer of at least 10^4 was achieved. Cytotoxicity was observed in the 10^{-1} dilution. Complete inactivation (no growth) was indicated in all higher dilutions tested. At least a 3-log reduction in titer was demonstrated beyond the cytotoxic level.

*Please note: Although efficacy data was acceptable, the use of the product in pump spray form against Avian Influenza A is not. See Recommendations.

2. The submitted efficacy data (MRID No. 468299-02) support the use of the product, Tackle, as a disinfectant with virucidal activity against Avian Influenza A (H9N2) virus on hard, non-porous surfaces at a 1:32 dilution in the presence of 100 ppm hard water and a 5% organic soil load for a contact time of 5 minutes, when applied to surfaces in liquid form. A recoverable virus titer of at least 10^4 was achieved. Cytotoxicity was not observed. Complete inactivation (no growth) was indicated in all dilutions tested.

VII. RECOMMENDATIONS

1. The proposed label claims that the product, Tackle, is an effective disinfectant on hard, non-porous surfaces against Bird Flu (Avian Influenza A) in the presence of a 5% organic soil load when used:

- At full strength for a contact time of 5 minutes (directly applied to surfaces), and
- At a 1:32 dilution for a contact time of 5 minutes (directly applied to surfaces).

Data provided by the applicant support these claims against Avian influenza virus, type A.

2. The proposed label claims that the product, Tackle, is an effective disinfectant on hard, non-porous surfaces against Bird Flu (Avian Influenza A) in the presence of a 5% organic soil load when used at full strength for a contact time of 30 seconds (spray application). This claim is unacceptable.

Although the product demonstrated effectiveness against Avian Influenza (A) (H3N2), pump-spray OR other similarly ready-to-use (RTU) packaged products do not adequately deliver the volume of liquid required to disinfectant sites likely to be contaminated with avian influenza (i.e., poultry and/or farm premises). The applicant must indicate that this pattern is not appropriate against Avian Influenza.

3. The applicant must add to their proposed label use sites for which Avian Influenza claims are applicable (i.e. farm premise and poultry houses) as an extension of DIS/TSS-18 and/or -19.

4. Page 7 of the proposed label lists "Veterinary Clinic" as a use location. It must be made clear that this location is not to be used in connection with claims against Avian Influenza A (H3N2 and H9N2). The Agency is not accepting the proposed label claim for the use of this product in veterinary applications against Avian Influenza virus.

5. The words "bird flu" must be deleted from the proposed label and changed to "Avian Influenza A" because these words are too general of a descriptor. Product users are likely to presume that product efficacy has been demonstrated using highly pathogenic forms of the Avian influenza A virus.

6. The label makes several claims that the product "kills germs" or is "germicidal." These are unqualified claims. This product does not qualify for the unqualified germ claim because it is not fungicidal. Therefore, all references to "germ(s)" must be marked with an asterisk (*) referring to the list of organisms tested. For more information, see this letter pertaining to germ claims: http://www.epa.gov/oppad001/germs.htm.

7. The applicant needs to make the following additional changes to the proposed label:

- On page 5 under the "Allergen Destruction . . ." section, change "fiberglass and tubs" to read "and fiberglass tubs."

- On page 7 under "Use Site," change "outdoor furniture" to read "outdoor furniture (except cushions and woodframes)" and change "picnic tables" to read "picnic tables (non-wooden)."